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LODGEPOLE PINE NEEDLEMINER

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YOSEMITE NATIONAL PARK-CALIF.

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LODGEPOLE PINE NEEDLEMINER

Assistance is again asked of employees and other interested persons in Yosemite National Park in obtaining data on the Lodgepole Pine Needleminer, Recurvaria milleri Busck. These instructions, which follow closely except for later developments, those issued in 1935, were prepared for guidance in carrying out this requested assistance.

The summer of 1937 will see the flight of the moths of the Lodgepole Pine Needleminer. This flight occurs every two years during the months of July and August, usually between the second week of July and the third week of August, or a period of approximately one month. Our information on the extent, location, and concentration of this serious insect is all too meager and considerable information can be obtained through the efforts of others interested in the welfare of Yosemite.

Present Information on Occurrence in Yosemite National Park

The work of the Lodgepole Pine Needleminer has been observed in varying degrees in all parts of the park. The infestations are very heavy at Porcupine Flat, Forsyth Pass, Bear Valley, Rodgers Canyon; are moderate in intensity in Kerrick Canyon, on both sides of Benson Lake, in the vicinity of Snow Creek cabin, in Ten Mile Meadows, on the Isberg Pass trail, and at Merced Lake; are present in discernible numbers at Tenaya Lake, throughout the Tuolumne Meadows region up to Tioga Pass and down to Glen Aulin, on the Rafferty Creek trail, a little way up the Lyell Fork trail, fairly numerous in the Illillouette drainage, and scattered lightly throughout the southeastern parts of the park even into the Sierra National Forest at Chiquito Lake. As it may not be possible to cover all of the Park's Lodgepole Pine types during the flight of the moths of this insect, it can be readily seen that any information will be of considerable value. The number of Foresters available is limited for the time in which the flight takes place and observations by others will piece out their data.

Life History and Identification of the Adults, (the Moths)

This insect has a life cycle embracing two years. Its correct name is the Lodgepole Pine Needleminer, Recurvaria milleri Busck. Its scientific name is in honor of John M. Miller who has worked so long in the Yosemite on its insect problems. The life history was worked out by John E. Patterson, also well known in the park, and all of the known information on this insect has been collected here in the Yosemite. It is very common at the present time and has been responsible for a considerable amount of defoliation in the Lodgepole Pine in the last 40 years. It is considered as the forerunner of large barkbeetle infestations in the Lodgepole Pine types, because of weakening effect on the vitality of the trees. Either this species, or a closely related species, has been reported from Lodgepole Pine in Sequoia National Park, where it has not yet done any serious damage.

The flight of the adults (moths) occurs once every two years in the months of July and August. It is then that the eggs of the succeeding generation are laid on healthy appearing needles of that year's growth. These eggs are very small and it takes an experienced observer to detect them. The eggs develop eventually into very small pale orange or yellow caterpillars who enter the needles, mining and hibernating until the August of the following year. During their first summer, the caterpillars change to needles of that year, again mining and hibernating until June of the second year. They then pupate in their black pupal cases or cells until their emergence as adult moths during July and August of the second year. The flight years are the alternate years, as for instance this year of 1937. At Porcupine Flat approximately 60 percent of the insects alive were found to have been in their pupal cases or cells on the 17th of June this year.

The moths are rather small but because of their great numbers in an infested area are rather conspicuous. They are from ½ to 3/4 of an inch in length, slender, grayish-white in color with little black spots interspersed on the wings. These moths have appeared in such numbers as to be veritable nuisances to campers as they get into the pots, pans, and kettles containing food and water. The creeks are sometimes literally covered with bodies of these moths that have fallen in the water.

Detection of their Work (Mined Needles)

The eggs are usually laid at the base of the needles of the present year's growth. A small hole the size of a pinhead can often be seen at the tip of the needle through which the growing larvae have emerged. The portion of the needle that has been mined becomes a chestnut-brown in color indicating the death of the mined portion. The mined needles usually drop in a short time after the emergence of the caterpillar or of the moth. Sometimes the attack is so heavy as to give the forest an appearance of having been scorched by a ground fire. A moderately infested area has the appearance, from a distance, of a lightly scorched area, i.e. being reddish-brown in color. Mined needles can be found anytime in this infested area.

One can start looking for these grayish-white moths soon after the first of July and it is in those areas from which the Needleminer has not yet been reported that a careful surveillance should be made by as many observers as possible. Every attempt will be made by experienced observers to follow up any report sent in by the observers. As soon as a suspicious insect is seen, it should be reported to the Forester's office in Yosemite Valley, either by telephone or by an urgent written message. There is only one month in which to investigate any and all reports on the flight of these moths.

Instructions to Observers

In order to give credence to reports of the occurrence of the moths or the work of this insect, information should include the following data and specimens. Specimens are easy to keep and transport in a small penny matchbox, which can be stuffed with tissue paper so that the insects will not be marred and make identification sometimes difficult.

1. Location by township, range, section or quarter-section of the area that has been surveyed; as accurately as possible.
2. Concentration -- whether light, medium, or heavy.
3. Date and time of the observation.
4. General direction of the flight, if any.
5. Samples of the mined needles if found in the adjoining trees.
6. Specimens of the moths observed. Ship in penny matchboxes if available.
7. Name and title of the observer.

Conclusion

Work of the needlemining insects has been observed on practically every coniferous species in the park and observations made on trees other than Lodgepole Pine can be sent in and will also be of value. Directions for observing these other tree species are the same as for the Lodgepole Pine. Whitebark and Mountain White Pine specimens are highly desirable.

APPROVED:

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